

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Mukasa, et al. ) Group Art Unit Unknown  
 )  
 Appl. No. : Unknown )  
 )  
 Filed : Herewith )  
 )  
 For : A LASER WELDING HEAD- )  
 CONTROLLING SYSTEM, A )  
 LASER WELDING HEAD )  
 AND A METHOD FOR )  
 CONTROLLING A LASER )  
 WELDING HEAD )  
 )  
 Examiner : Unknown )

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
 Washington, D.C. 20231

Dear Sir:

Prior to calculating the number of claims, please amend the above-identified application as follows:

IN THE CLAIMS:**Please amend Claim 5 as follows:**

5. (Amended) A method for controlling a laser welding head as defined in claim 3, further comprising the step of monitoring welding defects of the parts to be welded based on the processed data and the CAD data.

**Please add the following claims:**

6. (New) A method for controlling a laser welding head as defined in claim 4, further comprising the step of monitoring welding defects of the parts to be welded based on the processed data and the CAD data.

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7. (New) A laser welding head-controlling system for controlling the position of a laser welding head with respect to an target area of objects to be welded, comprising:

at least two semiconductor lasers for emitting linear laser beams at a predetermined angle toward the target area;

a CCD camera provided with a band-pass filter, through which linear laser beams reflected by the objects pass exclusively, to generate an image of the target area; and

an image processor for processing the image of the target area to determine the progress of welding, thereby controlling the position of a laser welding head.

8. (New) The laser welding head-controlling system according to Claim 7, further comprising a CAD data system which stores CAD data of the objects, said data being used to control the position of the laser welding head.

9. (New) A laser welding head comprising the laser welding head-controlling system of Claim 7, a laser oscillator to oscillate a laser for welding, and a condenser to converge the oscillated laser.

10. (New) A method for controlling the position of a laser welding head with respect to a target area of objects to be welded, comprising the steps of:

emitting at least two linear lasers beams at a predetermined angle toward the target area;

generating an image of the target area exclusively from linear laser beams reflected by the objects passing through a band-pass filter, using a CCD camera provided with the band-filter;

processing the image of the target area to determine the progress of welding; and  
controlling the position of the laser welding head.

11. (New) The method according to Claim 10, further comprising using CAD data of the objects to control the position of the laser welding head.

#### REMARKS

Claim 5 has been amended to change the multiple dependency to a single dependency. Claims 6-11 have been added in accordance with U.S. practice. No new matter has been added.

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Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE." Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Should the Examiner have any questions concerning this amendment, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 8 May 2001

By: Daniel Altman

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KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated:

8 May 2001

By:

Daniel E. Altman

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Newport Beach, CA 92660

(949) 760-0404

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

Claim 5 has been amended as follows:

5. (Amended) A method for controlling a laser welding head as defined in claim 3 ~~or~~  
~~4~~, further comprising the step of monitoring welding defects of the parts to be welded based on  
the processed data and the CAD data.

Claims 6-11 have been added.

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